AMENDMENTS TO THE CLAIMS

The following is a complete listing of revised claims with a status identifier in parenthesis.

LISTING OF CLAIMS

1. (Previously Presented) A method for visually supporting an electrophysiology catheter application in the heart, comprising:

visualizing electroanatomical 3D mapping data, provided during the performance of the catheter application, of an area of the heart to be treated;

recording 3D image data of the area to be treated with a method of tomographical 3D imaging before the catheter application is carried out;

extracting a 3D surface profile of objects in the area to be treated from the 3D image data by segmentation; and

visualizing the electroanatomical 3D mapping data and 3D image data representing at least the 3D surface profile by registration correctly correlated in position and dimension and superimposed upon one another, the correlation in the correct position and dimension being automatically effected by the surface matching, at least in one stage of the registration, the 3D surface profile from the 3D image data being at least approximately brought to match a 3D surface profile from the 3D mapping data.

2. (Previously Presented) The method as claimed in claim 1, wherein the 3D image data of the area to be treated are recorded with a method of at least one of X-ray computer tomography and magnetic resonance tomography.

3. (Previously Presented) The method as claimed in claim 1, wherein the 3D image data of the area to be treated are recorded by use of a 3D ultrasonic method.

4. (Previously Presented) The method as claimed in claim 1, wherein the correlation with the correct position and dimension is effected automatically in a first stage during the performance of the catheter application by way of at least one of distinct anatomical points and artificial markers and is refined by the surface matching in a later second stage.

5. (Previously Presented) The method as claimed in claim 1, wherein the 3D image data are visualized via a volume rendering technique.

6. (Previously Presented) The method as claimed in claim 1, wherein the 3D surface profile from the 3D image data is visualized as polygonal grid.

7. (Previously Presented) The method as claimed in claim 1, wherein the superimposition is effected with adjustable transparency and adjustable blending factor.

8. (Previously Presented) The method as claimed in claim 1, wherein a registration is effected between a catheter used during the catheter application and the 3D image data and at least a part of the catheter is visualized in real time in the representation of the 3D image data representing at least the 3D surface profile.

9. (Original) The method as claimed in claim 8, wherein the at least one part of the catheter is visualized without superimposition of the 3D mapping data from time to time.

10. (Previously Presented) The method as claimed in claim 8, wherein, in each case, an instantaneous distance of a tip of the catheter from a predeterminable picture element of the 3D image data is calculated and the distance is represented coded in the visualization.

11. (Original) The method as claimed in claim 10, wherein the distance is represented by color coding of the visualization of the catheter.

12. (Previously Presented) A device, comprising:

at least one input interface for electroanatomical 3D mapping data and 3D image data;

a segmentation module constructed for segmenting the 3D image data in order to extract a 3D surface profile of objects contained within a volume recorded by way of the 3D image data;

a registration module connected to the segmentation module, constructed for an automatic correlation with the correct position and dimension of the electroanatomical 3D mapping data and the 3D image data representing the 3D surface profile, by surface matching of the 3D surface profile from the 3D image data to a 3D surface profile from the 3D mapping data in at least one stage of the registration; and

a visualization module connected to the registration module, to superimpose the 3D mapping data and at least the 3D image data representing the 3D surface profile on one another in the correct position with the correct dimension and provide these for visualization via a display device.

13. (Previously Presented) The device as claimed in claim 12, wherein the registration module is constructed for the automatic correlation in the correct

position with the correct dimension in a multi-stage process, wherein the correlation in the correct position and the correct dimension is effected by way of at least one of distinct anatomical points and artificial markers in a first stage and is refined by the surface matching of the 3D surfaced profile from the 3D image data to a 3D surface profile from the 3D mapping data in a later, second stage.

14. (Previously Presented) The device as claimed in claim 12, wherein the visualization module is constructed for a real time visualization of a part of a catheter that is used within a representation of the 3D image data that forms at least the 3D surface profile.

15. (Previously Presented) The device as claimed in claim 14, further comprising a calculation module to calculate an instantaneous distance of a catheter tip from a predeterminable picture element of the 3D image data, the visualization module being constructed for the coded representation of the calculated distance in real time.

16. (Previously Presented) The device as claimed in claim 15, wherein the visualization module is constructed for colored visualization of the part of the catheter, the color varying in dependence on the distance calculated.

17. (Previously Presented) The method as claimed in claim 9, wherein, in each case, an instantaneous distance of a tip of the catheter from a predeterminable picture element of the 3D image data is calculated and the distance is represented coded in the visualization.

18. (Previously Presented) The device as claimed in claim 13, wherein the visualization module is constructed for visualizing a part of a catheter used within a representation of the 3D image data, forming at least the 3D surface profile, in real time.

19. (Previously Presented) A method for visually supporting an electrophysiology catheter application in the heart, comprising:

recording 3D image data of an area of the heart to be treated with a method of tomographical 3D imaging, before electroanatomical 3D mapping data is provided during the performance of the catheter application;

extracting a 3D surface profile of objects in the area to be treated from the 3D image data by segmentation; and

displaying the electroanatomical 3D mapping data and 3D image data representing at least the 3D surface profile by registration correctly correlated in position and dimension and superimposed upon one another, the correlation in the correct position and dimension being automatically effected by the surface matching, at least in one stage of the registration, the 3D surface profile from the 3D image data being at least approximately brought to match a 3D surface profile from the 3D mapping data.

20. (Previously Presented) The method as claimed in claim 19, wherein the 3D image data of the area to be treated are recorded with a method of at least one of X-ray computer tomography and magnetic resonance tomography.

21. (Previously Presented) The method as claimed in claim 19, wherein the 3D image data of the area to be treated are recorded by use of a 3D ultrasonic method.

22. (Previously Presented) A device for visually supporting an electrophysiology catheter application in the heart, comprising:

means for recording 3D image data of an area of the heart to be treated with a method of tomographical 3D imaging, before electroanatomical 3D mapping data is provided during the performance of the catheter application;

means for extracting a 3D surface profile of objects in the area to be treated from the 3D image data by segmentation; and

means for displaying the electroanatomical 3D mapping data and 3D image data representing at least the 3D surface profile by registration correctly correlated in position and dimension and superimposed upon one another, the correlation in the correct position and dimension being automatically effected by the surface matching, at least in one stage of the registration, the 3D surface profile from the 3D image data being at least approximately brought to match a 3D surface profile from the 3D mapping data.

23. (Previously Presented) The device as claimed in claim 22, wherein the 3D image data of the area to be treated are recorded with at least one of X-ray computer tomography and magnetic resonance tomography.

24. (Previously Presented) The device as claimed in claim 22, wherein the 3D image data of the area to be treated are recorded using 3D ultrasound.

--END CLAIM RECITATION--